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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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THE DOW CHEMICAL COMPANY  
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MIDLAND, MI 48641-1967

EXAMINER
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BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

MAIL DATE	DELIVERY MODE
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09/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/687,324	<b>Applicant(s)</b> URSCHELER ET AL.	
	<b>Examiner</b> Katherine A. Bareford	<b>Art Unit</b> 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 32 and 33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-22,24,25,27,29-31,34,35 and 37-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Claims 2, 23, 26, 28 and 36 are canceled*

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/07</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment of July 31, 2007 has been received and entered. With the entry of the amendment, claims 2, 23, 26, 28 and 36 are canceled, claims 32-33 are withdrawn, and claims 1, 3-22, 24, 25, 27, 29-31, 34, 35, 37-47 and new claims 48-52 are pending for examination.

#### *Information Disclosure Statement*

2. The information disclosure statement filed July 31, 2007 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

The Alleborn Article has not been provided with information.

#### *Priority*

3. Priority in the present application as to the use of EP 1249533 only extends back to 10/17/02, the filing date of 10/273,922. A review of 10/257,172 indicates that it does not teach all the features in the independent claims of the present application, and thus, priority fails.

*Claims*

4. The Examiner understands the term "interface layer" as in claims 1, 35 and 48 to refer to "the layer which comes in contact with the substrate to be coated" as defined at page 8 of the specification.

*Claim Rejections - 35 USC § 112*

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 48-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In new claim 48, lines 11-12, applicant has claimed that "said top layer having a viscosity of at least about 1040 centipoise". Applicant has pointed to Table 1 of the specification as providing support for the viscosity of the top layer being at least about 1040 centipoise. The Examiner has reviewed Table 1 and the disclosure as filed. However, Table 1 only indicates that the top layer as a pigment layer forming a good

printing surface can have a specific viscosity of 1040 centipoise. There is no indication there or elsewhere in the specification that a top layer to provide such printability can have any other specific viscosity or that the viscosity can be "about" 1040 centipoise or that the viscosity can be greater than 1040 centipoise. Ranges are given for the barrier layer viscosities and the interface viscosities, not a layer that provides printability. Therefore, claim 48 contains new matter.

In new claim 49, the claim provides that "at least one oil and/or grease barrier layer is adjacent to and in contact with at least one water vapor barrier layer, at least one water resistance layer, or both." Applicant has not provided where in the disclosure as filed support is specifically provided for such a requirement. The Examiner as reviewed the disclosure as filed, however, she finds no support for the specific claiming of this combination of layers being provided. Therefore, claim 49 contains new matter.

In new claim 51, it is claimed that the "at least one barrier layer comprises polyethylene". Applicant refers to page 8, line 1 of the specification for support. The Examiner has reviewed page 8, line 1 and the disclosure as filed, however, she does not find support for the specific claiming of "polyethylene" which is not identified in the disclosure. Page 8, line 1, refers to the genus of "polyolefins", but the disclosure does not describe the species of "polyethylene". As discussed in MPEP 2163.05, disclosure of a genus does not mean that a species is considered disclosed, and applicant has provided no indication as to what the disclosure of "polyolefin" would "reasonably

lead” those skilled in the art to any particular species. Note *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996) (a “laundry list” disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not “reasonably lead” those skilled in the art to any particular species).

In new claim 52, it is claimed that “each layer of the curtain has a viscosity of at least about 300 centipoise.” Applicant refers to Table 1 of the specification for support. The Examiner has reviewed Table 1 and the disclosure as filed, however, she does not find support for the specific ranges claimed. While the disclosed examples shows the layers all have viscosities of 300 and above, these examples do not indicate that “each” layer can have a viscosity of 300 for example, because different values are given for the different viscosities. For example the third layer viscosity is given as 430 centipoise. It is not indicated that the third layer can have a viscosity of 300 or 350 or 400 centipoise for example (note that it is not a barrier layer or interface layer). As well, it is not indicated that layers that are not barrier layers or interface layers can have values above those described. Moreover, the bottom layer viscosity in parent claim 48 is already required to be at least about 430 centipoise and the top layer viscosity in parent claim 48 is already required to be at least about 1040 centipoise. Therefore, this claim contains new matter.

The other dependent claim 50 does not cure the defect of the claim from which it depends.

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 3-6, 8-22, 24, 25, 27, 29-31, 34, 35, 37 and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/54828 (hereinafter '828) in view of Wittosch et al (US 6548120) and Katagiri et al (US 2002/0160121).

Claims 1, 35: '828 teaches a method of producing a coated substrate. Figure 2 and page 8. The steps include forming a composite, multilayer free flowing curtain. Figure 2 and page 8. The curtain comprises at least two layers. Page 2. At least one or more layer can provide barrier properties. Page 2. One layer can be provided with a material that provides water resistance functionality. Page 2. A layer can also provide oxygen barrier functionality. Page 2. The curtain is contacted with a continuous moving

web. Figure 2 and page 8. The web can be basepaper. Page 4. The method can be used to make packages, such as food and drink packages. Page 7.

Claim 6: the oxygen transmission can be no more than  $150 \text{ cm}^3/\text{m}^2$ , per 24 h (23 degrees C, 83% relative humidity) at one atm, and most preferably no more than  $1 \text{ cm}^3/\text{m}^2$ . pages 6-7.

Claim 8: it is desired to prevent cracks. Pages 4-5.

Claims 14-17: 5-8 layers can be applied. Page 8.

Claim 20: the barrier layer can include polyvinyl alcohol. Page 2.

Claim 22: the layers can include a surfactant. Page 4.

Claim 34: additional adhesive layer can be applied. Page 2.

Claim 37: the curtain can be formed with a slide die. Figure 2 and page 8.

'828 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value features (claims 1, 5), (3) the oil/grease features (claims 1, 3), (4) the water vapor transmission (claims 1, 4), (5) the oxygen barrier features (claims 1, 6), (6) the coat weight (claims 9-13), (7) the pigments and printability (claims 1, 18-19, 35), (8) the components of claim 21, (9) the solid contents (claims 1, 24-25), (10) the paper features (claim 27), (11) the web speed (claims 29,30, 35, 42-44 ), (12) the web weight (claim 31) and (13) the viscosity of the interface layer (claims 1, 35).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to



150 lbs/ft<sup>2</sup> (30-244 g/m<sup>2</sup>). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m<sup>2</sup>). Column 9, lines 10-20. The Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m<sup>2</sup>). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30. Wittosch teaches that the layers can be applied by curtain coating. column 6, lines 55-60. The layers can all be over 40 % solids. See column 8, lines 1-10. They can all be over 50 % solids. Column 8, lines 45-55. Wittosch teaches that the solids content in each layer should be preferably 40-55%. Column 5, lines 25-35. The Examiner understands this solids content to be referring to wt% as this is the conventional format for such description of solid contents. The viscosity of the layers can include 250-450 cps layers and 40-75 cps layers. Column 7, lines 5-10.

Katagiri teaches a curtain coating process where a multilayer coating is applied to a running web. Paragraph [0002] and figure 1. The lowermost layer (interface layer) can have a viscosity of 150 mPas (=centipoises). Paragraph [0039], [0042] and Table 1 (see examples 1-6). When coating with this lowermost layer of 150 mPas, acceptable coatings can be produced at 300 m/min, 400 m/min and 500 m/min (see example 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '828 teaches to include one or more layers that have functional barrier properties, including moisture resistance and oxygen barrier functionality and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would further have been obvious to provide the different functional features in separate layers, given '828's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, oxygen transmission, the Cobb values, and the Kit values, '828 and Wittosch teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features. As to the use of pigments and a printable layer, it is the Examiner's position that it would have been obvious to use well known pigments in the layers and to make printable, given that '828 teaches, for example, that food and drink packages can be made, which type of packages are well known to be printed and provided with color for consumer use. As to the coatweight, it would have been obvious to perform routine experimentation to optimize these features based on the functional features desired, given the teaching of '828 to provide multiple extremely thin layers and the number of functional layer features that are taught to be possibly

provided. As to the components of claim 21, Wittosch teaches that polyvinyl chloride, for example, is a desirable ingredient in the coating layers. As to the use of non-precoated papers, Wittosch teaches the desire to coat and protect such papers. As to the web weight, Wittosch teaches the desire to coat and protect papers of such weight. It further would have been obvious to modify '828 in view of Wittosch to further use a lowermost (interface) layer of 150 cP and a web speed of greater than 200 m/min and up to 500 m/min, as suggested by Katagiri with an expectation of providing a desirably speedy coating, because '828 in view of Wittosch teaches the desire to curtain coat moving webs and Katagiri teaches that when curtain coating a desirable multilayer curtain can be provided using a lowermost viscosity layer of 150 cP and a web speed of greater than 200 m/min to 500 m/min. As to the solids content, it would have been obvious to use solid contents as taught by Wittosch with an expectation of similar results, given that Wittosch teaches that the layer materials provided can be applied by curtain coating. This would provide that each layer of the curtain can be greater than 45 wt% solids, as Wittosch provides that each layer material can be greater than 45 wt% solids. One of ordinary skill in the art would clearly expect that multilayer curtains can be provided of these materials, because their viscosities overlap with the acceptable viscosities given by Katagiri.

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10. Claims 1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/54828 (hereinafter '828) in view of Wittosch et al (US 6548120) and Japan 2000-070810 (hereinafter '810).

Claims 1, 35: '828 teaches a method of producing a coated substrate. Figure 2 and page 8. The steps include forming a composite, multilayer free flowing curtain. Figure 2 and page 8. The curtain comprises at least two layers. Page 2. At least one or more layer can provide barrier properties. Page 2. One layer can be provided with a material that provides water resistance functionality. Page 2. A layer can also provide oxygen barrier functionality. Page 2. The curtain is contacted with a continuous moving web. Figure 2 and page 8. The web can be basepaper. Page 4. The method can be used to make packages, such as food and drink packages. Page 7.

Claim 6: the oxygen transmission can be no more than  $150 \text{ cm}^3/\text{m}^2$ , per 24 h (23 degrees C, 83% relative humidity) at one atm, and most preferably no more than  $1 \text{ cm}^3/\text{m}^2$ . pages 6-7.

Claim 8: it is desired to prevent cracks. Pages 4-5.

Claims 14-17: 5-8 layers can be applied. Page 8.

Claim 20: the barrier layer can include polyvinyl alcohol. Page 2.

Claim 22: the layers can include a surfactant. Page 4.

Claim 34: additional adhesive layer can be applied. Page 2.

Claim 37: the curtain can be formed with a slide die. Figure 2 and page 8.

'828 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value features (claims 1, 5), (3) the oil/grease features (claims 1, 3), (4) the water vapor transmission (claims 1, 4), (5) the oxygen barrier features (claims 1, 6), (6) the coat weight (claims 9-13), (7) the pigments and printability (claims 1, 18-19, 35), (8) the components of claim 21, (9) the solid contents (claims 1, 24-25), (10) the paper features (claim 27), (11) the web speed (claims 35, 42), (12) the web weight (claim 31) and (13) the viscosity of the interface layer (claims 1, 35).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to 150 lbs/ft<sup>2</sup> (30-244 g/m<sup>2</sup>). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m<sup>2</sup>). Column 9, lines 10-20. The Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m<sup>2</sup>). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30. Wittosch teaches that the layers can be applied by curtain coating. column 6, lines 55-60. The layers can all be over 40 % solids. See column 8, lines 1-10. They can all be over 50 % solids. Column 8, lines 45-55. Wittosch teaches that the solids content

in each layer should be preferably 40-55%. Column 5, lines 25-35. The Examiner understands this solids content to be referring to wt% as this is the conventional format for such description of solid contents. The viscosity of the layers can include 250-450 cps layers and 40-75 cps layers. Column 7, lines 5-10.

'810 teaches a curtain coating process where a multilayer coating is applied to a running web. See the abstract and figure 1. The lowermost layer (interface layer) can have a viscosity of 50-300 cP. See the abstract. The speed of the web is tested at 230 m/min, for example. See paragraph [0094].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '828 teaches to include one or more layers that have functional barrier properties, including moisture resistance and oxygen barrier functionality and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would further have been obvious to provide the different functional features in separate layers, given '828's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, oxygen transmission, the Cobb values, and the Kit values, '828 and Wittosch teach that these are important values to control in the area of that claimed by applicant, and one of ordinary skill in the art would perform routine experimentation to optimize

the specific values of these desirable features. As to the use of pigments and a printable layer, it is the Examiner's position that it would have been obvious to use well known pigments in the layers and to make printable, given that '828 teaches, for example, that food and drink packages can be made, which type of packages are well known to be printed and provided with color for consumer use. As to the coatweight, it would have been obvious to perform routine experimentation to optimize these features based on the functional features desired, given the teaching of '828 to provide multiple extremely thin layers and the number of functional layer features that are taught to be possibly provided. As to the components of claim 21, Wittosch teaches that polyvinyl chloride, for example, is a desirable ingredient in the coating layers. As to the use of non-precoated papers, Wittosch teaches the desire to coat and protect such papers. As to the web weight, Wittosch teaches the desire to coat and protect papers of such weight. It further would have been obvious to modify '828 in view of Wittosch to further use a lowermost (interface) layer of, for example 300 cP and a web speed of greater than 200 m/min, as suggested by '810 with an expectation of providing a desirably speedy coating, because '828 in view of Wittosch teaches the desire to curtain coat moving webs and '810 teaches that when curtain coating a desirable multilayer curtain can be provided using a lowermost viscosity layer of 50-300 cP and a web speed of greater than 200 m/min. As to the solids content, it would have been obvious to use solid contents as taught by Wittosch with an expectation of similar results, given that Wittosch teaches that the layer materials provided can be applied by curtain coating.

This would provide that each layer of the curtain can be greater than 45 wt% solids, as Wittosch provides that each layer material can be greater than 45 wt% solids. One of ordinary skill in the art would clearly expect that multilayer curtains can be provided of these materials, because their viscosities overlap with the acceptable viscosities given by '810.

11. Claims 29-30 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable '828 in view of Wittosch and '810 as applied to claims 1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42 above, and further in view of Japan 2000-045200 (hereinafter '200).

'828 in view of Wittosch and '810 teach all the features of these claims except a web speed of at least 400 m/min or 500 m/min.

However, '200 teaches a method of curtain coating onto a moving web using a coating with a solid content of 55-70 wt%. See the abstract. '200 teaches that coatings can be performed with such solids content at a web speed of 1300 m/min. See paragraphs [0026] – [0034] and Table 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and '810 to use a web speed of greater than 400 m/min or 500 m/min as described by '200 in order to provide a desirable rapid coating process, because '828 in view of Wittosch and '810 teaches to curtain coat using a high solids content, and '200 teaches that when curtain coating with solids content of 55-70 wt% it is known to have web speeds as fast as 1300 m/min.



12. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch and Katagiri or '828 in view of Wittosch and '810 as applied to claims 1, 3-6, 8-22, 24, 25, 27, 29-31, 34, 35, 37 and 42-44/1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42, respectively, above, and further in view of the abstract of DD 221722 (hereinafter '722).

'828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 teaches all the features of this claim except use of synthetic magadiite as a pigment.

However, '722 teaches a desirable method of synthesizing magadiite, thus forming synthetic magadiite. Abstract. The produced material can be used as pigment. Abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 to use a pigment of synthetic magadiite as described by '722 in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 teaches to include one or more layers that have functional barrier properties and to use a pigmented coating, and '722 teaches that a known pigment that can be synthesized is magadiite.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch and Katagiri or '828 in view of Wittosch and '810 as applied to claims 1, 3-6,

8-22, 24, 25, 27, 29-31, 34, 35, 37 and 42-44/1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42, respectively, above, and further in view of Hughes (US 3508947)

'828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 teaches all the features of this claim except formation of a curtain with a slot die.

However, Hughes teaches that when curtain coating, it is well known to use a slide die (figure 1) or a slot type die (figure 8) to provide the free falling multilayer curtain. Column 8, lines 10-45.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 to use a slot die as described by Hughes in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch and Katagiri / '828 in view of Wittosch and '810 teaches to use a slide curtain coating die system, and Hughes teaches that it is desirable to curtain coat with either a slot or slide die system.

14. Claims 38, 39, 41 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch and Katagiri as applied to claims 1, 3-6, 8-22, 24, 25, 27, 29-31, 34, 35, 37 and 42-44 above, and further in view of Dittman et al (US 4001024).

'828 in view of Wittosch and Katagiri teaches all the features of these claims except the provision of polyethylene oxide in a layer. '828 does teach the use of a surfactant in the coating layers. See page 8.

However, Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and Katagiri to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch and Katagiri teaches to include a surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '828 indicates that surfactants can be in the various layers.

15. Claims 38, 39, 41 and 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over '828 in view of Wittosch and '810 as applied to claims 1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42 above, and further in view of Dittman et al (US 4001024).

'828 in view of Wittosch and '810 teaches all the features of these claims except the provision of polyethylene oxide in a layer. '828 does teach the use of a surfactant in the coating layers. See page 8.

However, Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and '810 to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch and '810 teaches to include a surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '828 indicates that surfactants can be in the various layers.

16. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable '828 in view of Wittosch, '810 and Dittman as applied to claims 38, 39, 41 and 46-47 above, and further in view of Japan 2000-045200 (hereinafter '200).

'828 in view of Wittosch, '810 and Dittman teach all the features of this claim except a web speed of at least 400 m/min.

However, '200 teaches a method of curtain coating onto a moving web using a coating with a solid content of 55-70 wt%. See the abstract. '200 teaches that coatings can be performed with such solids content at a web speed of 1300 m/min. See paragraphs [0026] – [0034] and Table 1.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch, '810 and Dittman to use a web speed of greater than 400 m/min as described by '200 in order to provide a desirable rapid coating process, because '828 in view of Wittosch, '810 and Dittman teaches to

curtain coat using a high solids content, and '200 teaches that when curtain coating with solids content of 55-70 wt% it is known to have web speeds as fast as 1300 m/min.

17. Claims 41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/54828 (hereinafter '828) in view of Wittosch et al (US 6548120), WO 92/11095 (hereinafter '095) and Dittman (US 4001024).

'828 teaches a method of producing a coated substrate. Figure 2 and page 8. The steps include forming a composite, multilayer free flowing curtain. Figure 2 and page 8. The curtain comprises at least two layers. Page 2. At least one or more layer can provide barrier properties. Page 2. One layer can be provided with a material that provides water resistance functionality. Page 2. A layer can also provide oxygen barrier functionality. Page 2. The curtain is contacted with a continuous moving web. Figure 2 and page 8. The oxygen transmission can be no more than 150 cm<sup>3</sup>/m<sup>2</sup>, per 24 h (23 degrees C, 83% relative humidity) at one atm, and most preferably no more than 1 cm<sup>3</sup>/m<sup>2</sup>. pages 6-7. The layers can include a surfactant. Page 4. The web can be basepaper. Page 4. The method can be used to make packages, such as food and drink packages. Page 7.

'828 teaches all the features of these claims except for (1) the combination of different layer materials, (2) the Cobb value features, (3) the oil/grease features, (4) the water vapor transmission, (5) the oxygen barrier features, (6) the coat weight, (7) the

solid contents, (8) the web speed (claims 41, 45), (9) the provision of polyethylene oxide in a layer, and (10) the printability (claim 41).

However, Wittosch teaches layer materials desired to be applied as part of a multilayer coating to paper webs. The basis weight of the substrate paper can be 20 to 150 lbs/ft<sup>2</sup> (30-244 g/m<sup>2</sup>). Column 6, lines 40-50. The substrate can be uncoated paper and paperboard. Column 6, lines 40-45. Wittosch teaches that it is desired to provide grease resistant layers. Column 7, lines 30-35 and column 10, line 15 through column 11, line 35. The grease Kit value can be 11-12. column 11, lines 15-25 and column 7, lines 60-68. It is also desirable to provide water vapor barrier functionality and water resistance functionality. Column 7, lines 30-60. The water vapor transmission rate can be less than 2.38 g/100 sq.inches in a day (about 37 g/m<sup>2</sup>). Column 9, lines 10-20. The Cobb test for water resistance can be 0.99-.58 g/100 sq.inches in 30 min (about 15-9 g/m<sup>2</sup>). Column 11, lines 15-25. The layers can include polyvinyl chloride. Column 5, lines 20-30. Wittosch teaches that the layers can be applied by curtain coating. column 6, lines 55-60. The layers can all be over 40 % solids. See column 8, lines 1-10. They can all be over 50 % solids. Column 8, lines 45-55. Wittosch teaches that the solids content in each layer should be preferably 40-55%. Column 5, lines 25-35. The Examiner understands this solids content to be referring to wt% as this is the conventional format for such description of solid contents. The viscosity of the layers can include 250-450 cps layers and 40-75 cps layers. Column 7, lines 5-10.

'095 teaches curtain coating processes. Page 1, lines 1-5. '095 teaches that for economic reasons, high coating speeds are desirable provided they can be achieved with low waste and without loss of product quality. Page 1, lines 20-30. '095 teaches that high coating speeds are possible by using a low viscosity bottom layer. Page 1, lines 35-35. The curtain coating can be multilayer curtain coating. page 6, line 30 through page 7, line 10 and figures 1 and 4. Uniform coatings can be achieved with speeds up to 738 m/min ( $\text{mmin}^{-1}$ ). Page 11, lines 5-25.

Dittman teaches that a well known surfactant to use when forming multilayer coating layers on slide die systems is polyethylene oxide. See column 7, lines 55-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 to further include functional layers that provide grease and/or water vapor barrier functionality and other paper features as described by Wittosch in order to provide a desirable final paper for commercial use, because '828 teaches to include one or more layers that have functional barrier properties, including moisture resistance and oxygen barrier functionality and Wittosch teaches that it is desirable to provide layers that provide grease resistance and water vapor functionality when providing commercial paper. It would further have been obvious to provide the different functional features in separate layers, given '828's teaching that multiple functional layers can be provided. As to the specific water vapor transmission amounts, oxygen transmission, the Cobb values, and the Kit values, '828 and Wittosch teach that these are important values to control in the area of that claimed by applicant,

and one of ordinary skill in the art would perform routine experimentation to optimize the specific values of these desirable features. As to the coatweight, it would have been obvious to perform routine experimentation to optimize these features based on the functional features desired, given the teaching of '828 to provide multiple extremely thin layers and the number of functional layer features that are taught to be possibly provided. As to the solids content, it would have been obvious to use solid contents as taught by Wittosch with an expectation of similar results, given that Wittosch teaches that the layer materials provided can be applied by curtain coating. This would provide that each layer of the curtain can be greater than 45 wt% solids, as Wittosch provides that each layer material can be greater than 45 wt% solids. It further would have been obvious to modify '828 in view of Wittosch to further use as high a web velocity (coating speed) as possible, including up to 738 m/min, as suggested by '095 with an expectation of providing a desirably economically efficient coating, because '828 in view of Wittosch teaches the desire to curtain coat moving webs and '828 notes that a bottom low viscosity layer can be provided (page 4, lines 5-15) and '095 teaches that when curtain coating it is desirable to increase the coating speed to as high as possible, including to 738 m/min, for economic reasons by a process that uses a low viscosity bottom layer. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify '828 in view of Wittosch and '095 to further use a surfactant such as polyethylene oxide as described by Dittman in order to provide a desirable final paper for commercial use, because '828 in view of Wittosch and '095



teaches to include a surfactant in the layers, and Dittman teaches that a well known surfactant for multilayer coatings on slide dies is polyethylene oxide. As to the interface layer, '828 indicates that surfactants can be in the various layers. As to the use of a printable layer, it is the Examiner's position that it would have been obvious to make the top layer printable, given that '828 teaches, for example, that food and drink packages can be made, which type of packages are well known to be printed and provided with color for consumer use.

#### *Response to Arguments*

18. Applicant's arguments filed July 31, 2007 have been fully considered but they are not persuasive.

As to applicant's first statements as to the Examiner's position at pages 11-12 of the amendment, the Examiner notes that she is not taking the position that silence is a generic teaching, but rather that reading the cited references as a whole would provide the suggestion of the claimed features of the present application, for the reasons discussed in the rejections above. As to specific arguments with the rejections above, they are discussed below:

(A) As to applicant's arguments as to the rejections of claims 1, 3-6, 8-22, 24, 25, 27, 29-31, 34, 35, 37 and 42-44 using '828 in view of Wittosch and Katagiri, the Examiner has reviewed applicant's arguments at pages 12-19 of the amendment, however, the rejection is maintained. (1) As to the argument that the teaching of Katagiri as to the

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interface layer with a viscosity of 150 centipoise conflicts with the teaching of '828, the Examiner disagrees for the reasons fully spelled out at page 23 of the February 5, 2007 Office Action. (2) As to the argument that Wittosch teaches a substantially different coating process, namely a single layer coating process, and that it is well known that multilayer curtain coating is far more complex than single layer curtain coating (referencing a declaration of Dr. Bauer in related co-pending 10/691,890), the Examiner notes that Wittosch does not describe a multilayer curtain coating process. However, the Examiner has cited Wittosch as shown the known use of the claimed solids content in curtain coating, and the overlap of the viscosities of Wittosch with the acceptable viscosities for use in multilayer curtain coating as shown by Katagiri clearly shows that such coatings would desirably be used in multilayer curtain coating. Thus, it is the combination of references that is used to make the rejection. The declaration of Dr. Bauer in a different case directed to differently claimed features does not address the overlap between the teachings of the references or the expectations that one of ordinary skill in the art would have looking at this combination of references in this case. (3) As to the argument that '828 does not disclose a multilayer curtain coating having a top layer providing printability, the Examiner notes this. The Examiner was not arguing that '828 specifically taught such a feature. The Examiner did, however, note that food and drink packages are well known to be printed and provided with color for consumer use, <sup>and</sup> ~~as~~ applicant has not traversed this position. It is the Examiner's position that as '828 teaches to make food and drink packages, it would have been obvious to use well

known pigments in the layers and to make a top printable layer for this purpose of printing the food and drink package. (4) As to the argument that the Examiner is of the position that the claimed invention is obvious since the references contain most of the elements of applicant's claims, and it would have been obvious to pick and choose the remaining various elements from the references and then apply routine experimentation, ignoring conflicting teaching in the references, to arrive at the subject matter of the claimed invention, the Examiner disagrees. The Examiner, in the rejection above, has fully set forth what is taught by the references, and what suggested modifications would be made and why these modifications would be suggested so as to provide the claimed invention. At page 22 of the Office Action of February 5, 2007, the Examiner also provided a full discussion of why one of ordinary skill in the art would be motivated to combine the references, and remains of that position. As to hindsight reconstruction, at pages 22-23 of the Office Action of February 5, 2007, the Examiner also provided a full discussion of why hindsight reconstruction was not used in the present case, and remains of that position. Applicant~~s~~ argues that hindsight and conflicting teaching occurs from the combination of '828 and Katagiri as to the viscosity of the bottom layer. The Examiner disagrees for the reasons as specifically stated at page 23 of the February 5, 2007 Office Action that there is a conflict in the references, and this lack of conflict further indicates why it is not hindsight to combine the references. As to the argument that the Examiner believes that silence is a generic teaching of no limits, the Examiner again states that she disagrees with applicant's

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position, as noted in the paragraph above. (5) As to the solids percent, this was discussed at pages 23-24 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. (6) As to claim 42, this was discussed at page 24 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. The declaration of Dr. Bauer in a different case directed to differently claimed features does not address the overlap between the teachings of the references or the expectations that one of ordinary skill in the art would have looking at this combination of references in this case.

(B) As to applicant's arguments as to the rejections of claims 1, 3-6, 8-22, 24, 25, 27, 31, 34, 35, 37 and 42 using '828 in view of Wittosch and '810, the Examiner has reviewed applicant's arguments at pages 19-21 of the amendment, however, the rejection is maintained. (1) Applicant argues that Konica ('810) is limited to curtains having very low solids contents, and that no prima facie case of obviousness is made. As to the combination of references, and the burden of supplying factual basis for the rejection the Examiner has specifically noted at page 24 in the Office Action of February 5, 2007 that '810, see the abstract, teaches that viscosities overlapping with that taught by the layers of Wittosch can be used, demonstrating the ability to acceptably use such layers. '810 uses viscosity to measure whether curtain coatings can be applied, not solids content. The Examiner has not argued that the solids in '810 necessarily overlap, rather that the viscosities in Wittosch and '810 overlap, and that is what '810 uses to

establish coatability. Therefore, it would be expected that a coating of acceptable viscosity can be used, including with the solids percent shown in Wittosch. (2) As to the combination of the references, this was discussed at pages 24-25 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. The Examiner argues that hindsight would not be present for the same reason as discussed in section (A) above. (3) As to the feature of a multilayer curtain having a solids content of at least 40%, this was discussed at page 25 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. (4) As to the features of claim 42, this was discussed at pages 25 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. The declaration of Dr. Bauer in a different case directed to differently claimed features does not address the overlap between the teachings of the references or the expectations that one of ordinary skill in the art would have looking at this combination of references in this case.

(C) As to applicant's arguments as to the rejections of claims 38, 39, 41 and 45-47 using '828 in view of Wittosch and Katagiri, and further in view of Dittman, the Examiner has reviewed applicant's arguments at pages 21-25 of the amendment, however, the rejection is maintained. As discussed at pages 25-26 of the February 5, 2007, the Examiner has not cited Dittman as teaching a curtain coating process, the Examiner has cited Dittman as teaching the well known use of polyethylene oxide as a surfactant in multilayer coatings on slide dies, and further notes that '828 teaches the

use of a surfactant in the curtain coating layers. Dittman is cited as to teaching surfactant that would be expected to be desirable for such use. As to the solids content of claim 41, and the viscosity of claim 47, these are suggested by the primary combination of references of '828 in view of Wittosch and Katagiri as discussed in section (A) above. As to Dittman teaching away from high viscosity interface layers, Dittman does not show the curtain coating process of the primary references, merely the well known use of the surfactant. As to the argument that while Dittman lists polyethylene oxide as a surfactant, but "it is well known that polyethylene oxide is not a surfactant", the Examiner notes that Dittman specifically teaches polyethylene oxide as a surfactant. As discussed by MPEP 716.01(c),

The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration include statements regarding unexpected results, commercial success, solution of a long-felt need, inoperability of the prior art, invention before the date of the reference, and allegations that the author(s) of the prior art derived the disclosed subject matter from the applicant.

Here attorney's statements that polyethylene oxide is not a surfactant would apparently fall under inoperability of the prior art. Moreover, MPEP 2145 also indicates that as to attorney argument,

The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness.")

(D) As to applicant's arguments as to the rejections of claims 38, 39, 41 and 46-47 using '828 in view of Wittosch and '810, and further in view of Dittman, the Examiner has reviewed applicant's arguments at page 22 of the amendment, however, the rejection is maintained for the same reasons given as to section (C) above as the same arguments are used by applicant.

(E) As to applicant's arguments as to the rejections of claims 41 and 45 using '828 in view of Wittosch, '095 and Dittman, the Examiner has reviewed applicant's arguments at pages 22-23 of the amendment, however, the rejection is maintained. This rejection was discussed at pages 27-28 of the February 5, 2007 Office Action, and the Examiner maintains her position as to this issue. The declaration of Dr. Bauer (and cited references to Alledborn) in a different case directed to differently claimed features does not address the overlap between the teachings of the references or the expectations that one of ordinary skill in the art would have looking at this combination of references in this case.

(F) As to new claims 48-52, these claims are rejected under 35 USC 112, first paragraph as containing new matter as discussed in their rejection above.

### *Conclusion*

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.


Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information



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for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KATHERINE BAREFORD  
PRIMARY EXAMINER